NPS Inventory and Monitoring Program

National Park Service
U.S. Department of the Interior

Appalachian Highlands Network Newsletter

Appalachian Trail, Big South Fork National River and Recreation Area, Blue Ridge Parkway, Great Smoky Mountains National Park, Obed Wild and Scenic River

Inventory and Monitoring News

INVENTORY PROGRESS

VASCULAR PLANTS – **336 new species** (to the parks) have been documented during field surveys at BISO, BLRI, and OBRI.

Blue star (*Amsonia tabernae-montana*)

Small-whorled pogonia (*Isotria medeoloides*) - new population of this Threatened orchid at BLRI

APHN fish inventory crews electro-shocking at Big South Fork

REPTILES AND AMPHBIANS – Field work is ongoing at BISO, BLRI, AND OBRI; over 50 species found so far.

Red-bellied turtle (*Pseudemys rubiventris*) – discovery on BLRI represented 100-mile range extension for the species, and a new species for the park.

THE NETWORK'S FIVE PRIMARY GOALS:

1. **CONDUCT BASELINE INVENTORIES** of natural resources in the parks, including plants and animals, geology, air quality and water quality;
2. **DEVELOP A COORDINATED LONG-TERM ECOLOGICAL MONITORING PROGRAM** to efficiently and effectively monitor ecosystem status and trends over time;
3. **DEVELOP DECISION SUPPORT SYSTEMS** (including GIS and other tools) to aid park managers in identifying, evaluating, and implementing management options;
4. **INTEGRATE INVENTORY AND MONITORING** programs with park planning, operation and maintenance, interpretation and visitor protection activities to help the parks in their efforts to make natural resource protection even more of an integral part of overall park management;
5. **COOPERATE WITH OTHER AGENCIES AND ORGANIZATIONS** to share resources, achieve common goals, and avoid unnecessary duplication of effort and expense.

(Inventory Progress – continued)

BIRDS – second breeding season surveys are underway at BLRI, BISO,OBRI

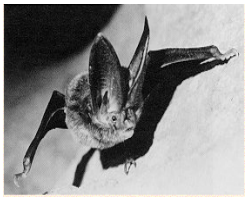
P**eregrine falcon** Documented for the 1st time at OBRI during fall 2003 migration

Red-breasted nuthatch - 1st breeding record for the Cumberland Plateau found at BISO

FISH – Field surveys are underway at BISO,BLRI, & BISO.

Duskytail darter (*Etheostoma percnurum*) from BISO

MAMMALS – Field surveys underway at all BISO, OBRI, & BLRI.



Rafinesque's big-eared bat (*Corynorhinus rafinesquii)*, found at BISO

(Photo by Merlin Tuttle, Bat Conservation International)

Progress Made:

VEGETATION MAPS – Aerial photography (color infrared) has been completed for all parks. The University of Georgia is preparing detailed vegetation maps for each park, using the aerial photographs and vegetation data being collected from ongoing field surveys. A draft vegetation map for the Smokies is complete.

GEOLOGY/SOILS – A detailed geologic inventory of the North Carolina section of the Parkway began in 2003; plans are underway for the US Geological Survey to begin mapping the Virginia section in the near future. A geologic inventory of the Great Smokies is underway with a draft map due in late 2004. Soils mapping of GRSM is approximately 65 percent complete. **Twenty-one new soil types, never before described, were discovered in the Smokies** during this project. A workshop is planned for the summer of 2004 to discuss soils mapping needs in the other network parks.

WATER RESOURCES – We're working with the US Geological Survey to identify outstanding waters in the network parks, as well as those with significant pollution, and to design a long-term water quality monitoring program. The draft monitoring plan should be completed in 2004.

AIR QUALITY – We're working with the Air Resources Division to identify air quality problems within the network parks, and to design and implement additional air quality monitoring where it's needed. Ongoing monitoring in the Great Smokies has revealed ozone damage to plants at higher elevations(exposure to high levels of ozone can also cause lung damage in people), as well as significant acid deposition impacts (including elevated levels of sulfate and aluminum in high-elevation streams).

Angel Falls Overlook, Big South Fork National River and Recreation Area

(Network Progess – continued)

LONG-TERM MONITORING OF VITAL SIGNS*

THE NATIONAL PARK SERVICE'S PRIMARY MISSION IS TO CONSERVE, UNIMPAIRED, THE NATURAL AND CULTURAL RESOURCES AND VALUES OF THE NATIONAL PARK SYSTEM FOR THE ENJOYMENT OF THIS AND FUTURE GENERATIONS.

Protecting and managing a park's natural resources requires a multi-agency, ecosystem approach because most parks are open systems, with threats such as air and water pollution, or invasive species, originating outside the park's boundaries. The long-term monitoring program is being designed to identify links between changes in resource condition and the causes of those changes, to provide an early warning of impending threats to the integrity of the parks' ecosystems, as well as to promote public understanding of park resources.

With assistance and cooperation from numerous subject matter experts and other natural resource agency personnel, we have identified and prioritized a list of vital signs to be monitored. The next step will be to develop the most efficient and cost-effective techniques for monitoring those indicators, and to narrow the list to what we can afford to monitor in a way that will produce meaningful and useful results.

PRELIMINARY LIST OF VITAL SIGNS FOR THE NETWORK

-Exotic diseases & insect pests
-External land use (incl. viewshed effects)
-Vegetation species composition & structure
-Land use patterns
-Water quality - (pH, DO, conductivity, temperature, flow, contaminants, siltation, turbidity)
-Weather patterns (necessary for interpreting other data)
-Stream substrate, channel, and drainage morphology
-Freshwater mussels
-Other aquatic macroinvertebrates
-Unsustainable recreational use & facility development
-Invasive exotic plants
-Animal species at risk (duskytail darter, other rare fish, T&E mussels)
-Grassland birds (& other early-successional habitat specialists)
-Air quality – (ozone, visibility, contaminants, nitrogen & sulfur deposition, particulates)
-T&E plants
-Fragmentation & connectedness of ecosystem components
-Soil structure and chemistry
-Soil erosion & deposition
-Harvest of wildlife and plants (legal & poaching)

(*"Vital Signs" are components and processes of park ecosystems selected to represent ecosystem health, effects of stressors, or elements that have important human values.)

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Appalachian Highlands Inventory and Monitoring Network
c/o Blue Ridge Parkway
199 Hemphill Knob Road
Asheville, North Carolina 28803

Phone
828-271-4779 ext. 312, ext. 224

E-mail
Robert_Emmott@nps.gov
Nora_Murdock@nps.gov
Patrick_Flaherty@nps.gov

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